When the revenue meter 20, 34, 42 receives the packet, it calculates the time of transition of any of the inputs with the following formula:--

In the Claims

Please add and consider the following new claims:

--9. The I/O device of claim 8 wherein said I/O signal indicates a signal level in at least one second electric circuit.

10. The I/O device of claim 9 wherein said second electric circuit comprises at least one relay.

11. The I/O device of claim 10 wherein said revenue meter accurately timestamps transition times of said at least one relay.

12. The I/O device of claim 9 wherein said second electric circuit carries a second signal, said second signal comprising between about 4mA to 20mA.

13. The I/O device of claim 8 wherein said microprocessor is operative to generate a signal level in at least one second electric circuit.

14. The I/O device of claim 13 wherein said second electric circuit further comprises at least one relay.

15. The I/O device of claim 8 further comprising at least one relay external to said I/O device, said relay having a state wherein said I/O signal is indicative of said state.

16. The I/O device of claim 15 wherein said revenue meter accurately timestamps transition times of said relay.

17. The I/O device of claim 8 further comprising at least one input wherein said I/O signal is indicative of the amount of current flowing into said at least one input.

18. The I/O device of claim 8 wherein said I/O device receives operating power from said revenue meter.

19. The I/O device of claim 18 wherein said I/O signal is indicative of a signal level in at least one second electric circuit.

20. The I/O device of claim 18 wherein said microprocessor is operative to generate a signal level from said I/O signal, said signal level generated in at least one second electric circuit

21. The I/O device of claim 8 wherein said interface link comprises a communications link.

22. The I/O device of claim 8 wherein said interface link comprises an RS-422 type serial communications link.

23. The I/O device of claim 8, wherein the revenue meter accurately timestamps transition times of at least one input of said I/O device.

24. The I/O device of claim 8, wherein the revenue meter is operative to detect errors in said microprocessor communication.

25. The I/O device of claim 24, wherein said error detection is performed using a cyclic redundancy check.

26. A metering apparatus, said metering apparatus measuring the delivery of electrical energy from an energy supplier to a consumer through a first electric circuit, said metering apparatus comprising:

a revenue meter enclosed within an enclosure;

an I/O device physically separate from said enclosure, wherein said I/O device connects to at least one second electric circuit;

an interface link operative to connect said I/O device to said revenue meter.

27. The metering apparatus of claim 26, wherein said I/O device further includes a microprocessor operative to process signals within said second electric circuit to communicate at least one I/O signal.

28. The metering apparatus of claim 26, wherein said I/O device is operative to receive power from said revenue meter.

29. The metering apparatus of claim 26, said revenue meter further comprising a processor, said processor operative to control the application of power to said I/O device.

30. The metering apparatus of claim 26, wherein said revenue meter accurately timestamps transition times of at least one input of said I/O device.

31. The metering apparatus of claim 26, wherein said second electric circuit further comprises at least one relay.

32. The metering apparatus of claim 26, wherein said second electric circuit further comprises between about a 4 to 20mA transducer.

33. The metering apparatus of claim 26, wherein said interface link comprises an RS-422 type serial communications link.

34. The metering apparatus of claim 26, wherein said second electric circuit further comprises an external contact.

35. The metering apparatus of claim 26, wherein said enclosure comprises a cover.

36. The metering apparatus of claim 26, wherein said interface link is expandable.

37. The metering apparatus of claim 26 further comprising a second I/O device.

38. A method of operating a metering apparatus, said method comprising:

(a) measuring the delivery of electrical energy from an energy supplier to a consumer through an electric circuit using a revenue meter, said revenue meter enclosed within an enclosure;

(b) locating an I/O device external to said enclosure of said revenue meter;

(c) connecting an interface link between said revenue meter and said I/O device; and

(d) communicating at least one I/O signal between said I/O device and said revenue meter via said interface link.

39. The method of claim 38 further comprising:

(e) attaching said I/O device to a second electric circuit.

40. The method of claim 39, wherein said second electric circuit comprises a relay.

41. The method of claim 39, wherein said second electric circuit comprises between about a 4 to 20mA transducer.

42. The method of claim 39, wherein said I/O device receives operating power from said revenue meter.

43. The method of claim 39, wherein said revenue meter timestamps state transitions in said second electric circuit.

44. The method of claim 43, wherein said I/O device receives operating power from said revenue meter.

45. The method of claim 38 further comprising:

(e) accommodating connection of at least one communications signal from said revenue meter on said I/O device.

46. The method of claim 45 further comprising:

(f) communicating at least one communications signal from said revenue meter via said interface link.

47. An I/O and communications device for use with a revenue meter, the revenue meter measuring the delivery of electrical energy from an energy supplier to a consumer through a first electric circuit and including an interface link, the I/O and communications device comprising:

a connector located on the I/O and communications device being operative to connect the I/O and communications device via the interface link to the revenue meter, wherein the I/O and communications device is physically separate from the revenue meter; and

wherein said I/O and communications device connects to at least one second electric circuit.

48. The I/O and communications device of claim 47, wherein said I/O and communications device provides a communications connection from said revenue meter to a second connector on said I/O and communications device.

49. The I/O and communications device of claim 48, wherein said I/O and communications device provides a second communications connection from said revenue meter to a third connector on said I/O and communications device.